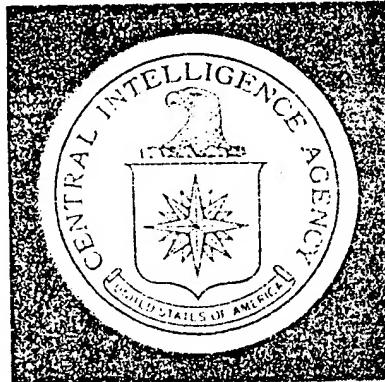


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DIRECTORATE OF
INTELLIGENCE

Intelligence Handbook

Soviet Submarines

Secret

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W A R N I N G

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
December 1969

INTELLIGENCE HANDBOOK

Soviet Submarines

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It was prepared by the Office of Strategic
Research and coordinated with the Foreign
Missile and Space Analysis Center and the
Office of Scientific Intelligence.*

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Noise Radiation by Submarines

Data on radiated noise levels are included in this handbook because of their importance in antisubmarine operations. Noise levels are expressed in decibels referenced to a standard level (1 microbar at 1 yard). Submarines which register levels of 30-35 db in the low frequency band and 20-25 db in the sonar band are considered quiet in operation. Only limited noise level data are available on the new classes of Soviet submarines.

Submarine Launched Missiles

Characteristics of the ballistic and cruise missiles carried by Soviet submarines are given below.

Ballistic Missiles

	<u>SS-N-4</u>	<u>SS-N-5</u>	<u>SS-N-6</u>	<u>New Missile (SS-NX-5)</u>
Configuration	single stage	single stage	single stage	unknown
Propellant	storable liquid	storable liquid	storable liquid	unknown
Launch mode	surfaced	submerged	submerged	submerged
Warhead weight	about 2,200 lbs	about 2,200 lbs	about 1,200 lbs	about 1,500 lbs
Maximum operational range	300 nm	650 nm	1,100 nm	about 3,000 nm
Reliability				
System	90%	70%	75%	80%
For				75%
Carrying submarines	Z-V, G-I, H-I	G-II, H-II	Y	unknown, possibly H-III

SS-N-3 Cruise Missile

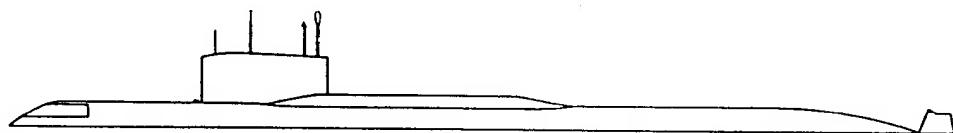
Type	rocket boosted turbojet
Guidance	preset autopilot with active terminal guidance, command override
Cruising speed	Mach 0.9 to 1.7
Maximum operational range	250 nm
Carrying submarines	modified W ("Long Bin" and "Twin Cylinder"), J, E-I, E-II

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Nuclear Powered Ballistic Missile Submarine - SSBN

Y Class



Production

Construction start

Severodvinsk 1964

Komsomol'sk 1966

Number completed by Dec 69 8

Characteristics

Complement about 100

Length 425 ft

Beam 38 ft

Displacement 7,200 tons

8,700 tons

Propulsion nuclear, 2 screws

Performance

Operating depth

normal 1,500 ft

collapse 2,000 ft

Submerged speed at least 26.7 kts

Patrol radius

10 days on station 7,200 nm

20 days on station 5,800 nm

Patrol duration 60 days

Noise levels at 7 kts, 12 kts

low frequency 55-60 db 62 db

sonar band 25 db 30 db

Armament

Ballistic missiles 16 SS-N-6

Torpedoes 18

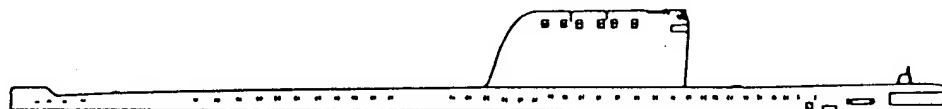
This new Polaris type submarine is being built at Severodvinsk and Komsomol'sk at a combined rate of six to eight units per year. Y class submarines started making operational patrols in the North Atlantic in June 1969, and the single unit in the Pacific could deploy in early 1970.

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Nuclear Powered Ballistic Missile Submarine - SSBN

H Class



Production

Construction period	1959-63
Number built	9

Characteristics

Complement	100
------------	-----

Length	380 ft
--------	--------

Beam	30 ft
------	-------

Displacement	
--------------	--

surfaced	4,100 tons
----------	------------

submerged	5,100 tons
-----------	------------

Propulsion	nuclear, 2 screws
------------	-------------------

Surface speed	10 kts
Dive depth	1,000 ft

Mallory

Max. submerged speed	25.9 kts
----------------------	----------

Patrol radius	
---------------	--

10 days on station	7,200 nm
--------------------	----------

20 days on station	5,800 nm
--------------------	----------

Patrol duration	60 days
-----------------	---------

Noise levels at 6.5 kts,	13 kts
--------------------------	--------

low frequency	60 db
---------------	-------

sonar band	72 db
------------	-------

	18 db
--	-------

	32 db
--	-------

Armament

Ballistic missiles	
--------------------	--

(carried in sail)	3 SS-N-5
-------------------	----------

Torpedoes	22
-----------	----

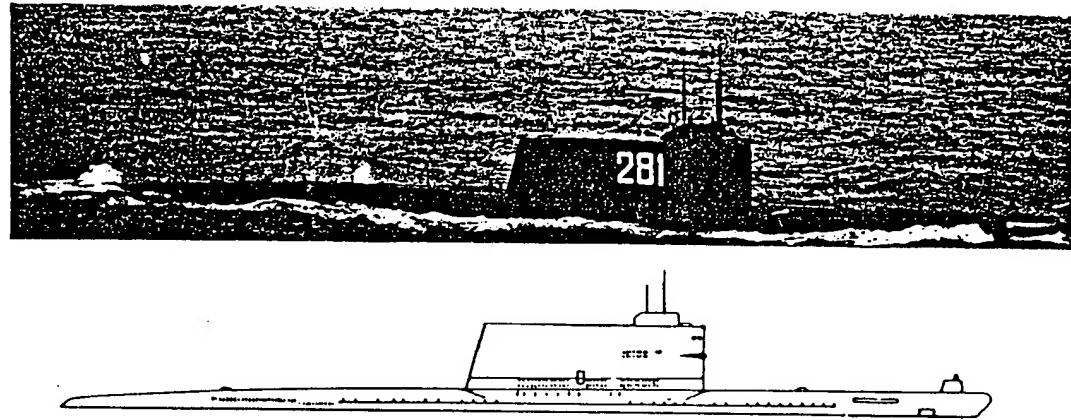
The program to convert the H-I class, which carried the SS-N-4 missile, to the H-II class probably will be completed in 1969. A modified unit (designated H-III) has six missile tubes in an enlarged sail, possibly to test a new 3,000 nm missile.

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Ballistic Missile Submarine - SSB

G Class



Production

Construction period	1958-62
Number built	23

Characteristics

Complement	85
------------	----

Length	320 ft
--------	--------

Beam	28 ft
------	-------

Displacement	
--------------	--

surfaced	2,300 tons
----------	------------

submerged	2,800 tons
-----------	------------

Mission	diesel, 3 screws
---------	------------------

Performance

One firing depth	
------------------	--

normal	1,000 ft
--------	----------

collapse	1,500 ft
----------	----------

Submerged speed	
-----------------	--

maximum	kts for 14 nm
---------	---------------

economical	3 kts for 300 nm
------------	------------------

Patrol radius	
---------------	--

10 days on station	3,000 nm
--------------------	----------

20 days on station	2,400 nm
--------------------	----------

Patrol duration	60 days
-----------------	---------

Noise levels	at 6 kts
--------------	----------

	snorkel battery
--	-----------------

low frequency	60 db
---------------	-------

sonar band	45 db
------------	-------

	32 db
--	-------

	6 db
--	------

Armament

Ballistic missiles (carried in sail)	3 SS-N-4 or SS-N-5
---	-----------------------

Torpedoes	22
-----------	----

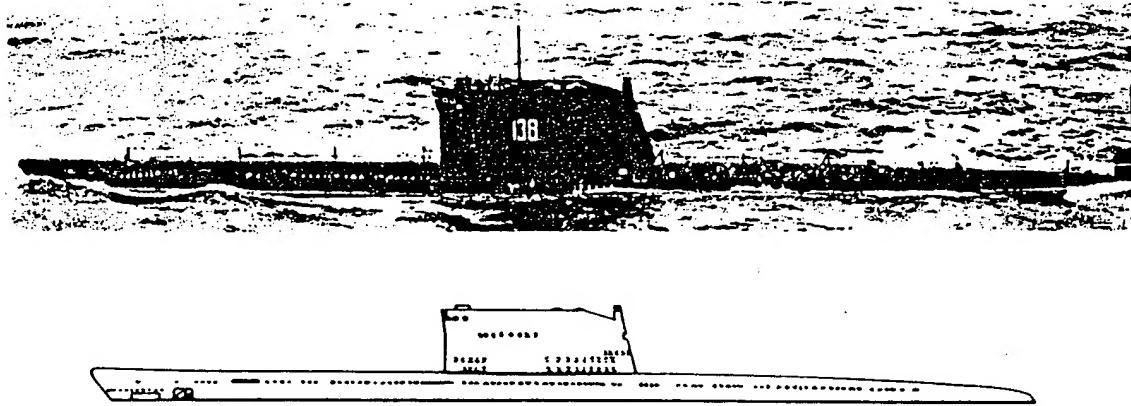
A program to convert G-I class submarines to the G-II class to fire the SS-N-5 missile is about half completed. Some components for one G class unit were supplied to Communist China.

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Ballistic Missile Submarine - SSB

Z-V Conversion Class



Production

Conversion period	1955-58
Number converted	6

Characteristics

Complement	80
Length	295 ft
Beam	26 ft
Displacement	
surfaced	2,000 tons
submerged	2,400 tons

Per

Per

collapse	750 ft
Submerged speed	1,100 ft
maximum	14 kts for 14 nm
economical	3 kts for 250 nm
Patrol radius	
10 days on station	3,000 nm
20 days on station	2,400 nm
Patrol duration	60 days
Noise levels	at 6 kts
snorkel	battery
low frequency	60 db 45 db
sonar band	32 db 6 db

Armament

Ballistic missiles	2 SS-N-4
Torpedoes	22

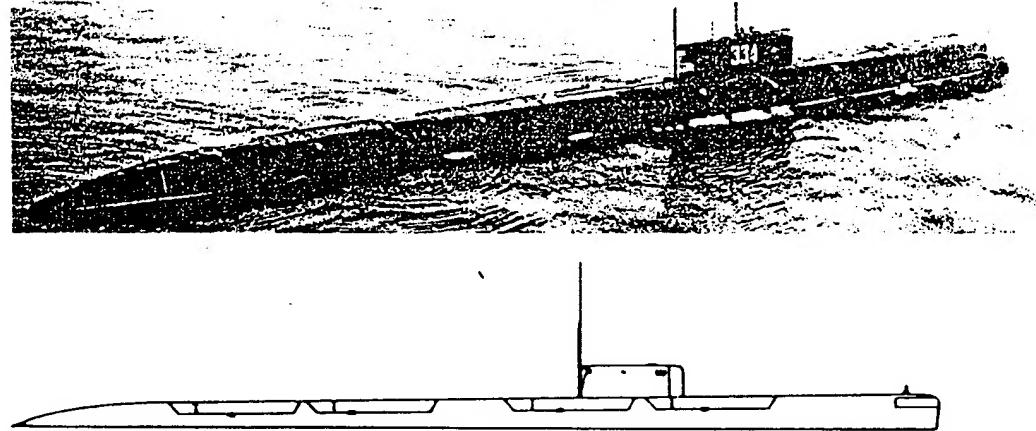
Conversion of the Z class was the initial Soviet effort to equip a submarine with ballistic missiles. These units probably will be phased out of service by 1973. One unit has been reconverted to a torpedo attack submarine.

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Nuclear Powered Cruise Missile Submarine - SSGN

E-II Class



Production

Construction period	1962-67
Number built	28

Characteristics

Complement	100
Length	385 ft
Beam	30 ft
Displacement	
surfaced	4,200 tons
submerged	5,200 tons
Propulsion	nuclear, 2 screws

Performance

Operating depth	
normal	1,300 ft
collapse	2,000 ft
Maximum submerged speed	24.9 kts
Patrol radius	
10 days on station	7,200 nm
20 days on station	5,800 nm
Patrol duration	60 days
Noise levels	at 6 kts, 12 kts
low frequency	60 db 72 db
sonar band	18 db 32 db

Armament

Cruise missiles	8 SS-N-3
Torpedoes	22

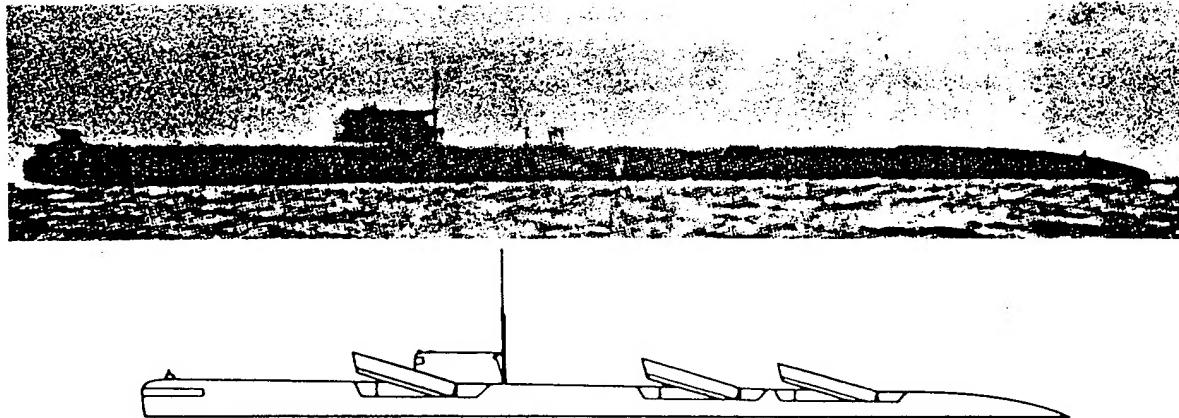
This class was built in Northern and Pacific fleet shipyards. E-II class submarines are targeted primarily against carrier forces and patrol the transit routes to the Far East, Norwegian Sea, and Atlantic. E-II submarines also alternate with N class attack submarines on Mediterranean patrol.

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Nuclear Powered Cruise Missile Submarine - SSGN

E-I Class



Missile launching tubes in elevated position

Production

Construction period 1960-62

Number built 5

Characteristics

Complement 100

Length 375 ft

Beam 30 ft

Displacement

4,000

Surface speed 13 kts
Normal speed 12 kts
Emergency speed 11 kts

Operating depth

normal 1,000 ft

collapse 1,500 ft

Maximum submerged speed 25.9 kts

Patrol radius

10 days on station 7,200 nm

20 days on station 5,800 nm

Patrol duration 60 days

Noise levels at 6 kts, 13 kts

low frequency 60 db 72 db

sonar band 18 db 32 db

Armament

Cruise missiles 6 SS-N-3

Torpedoes 22

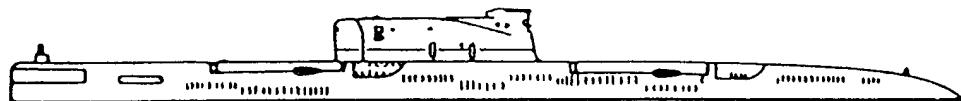
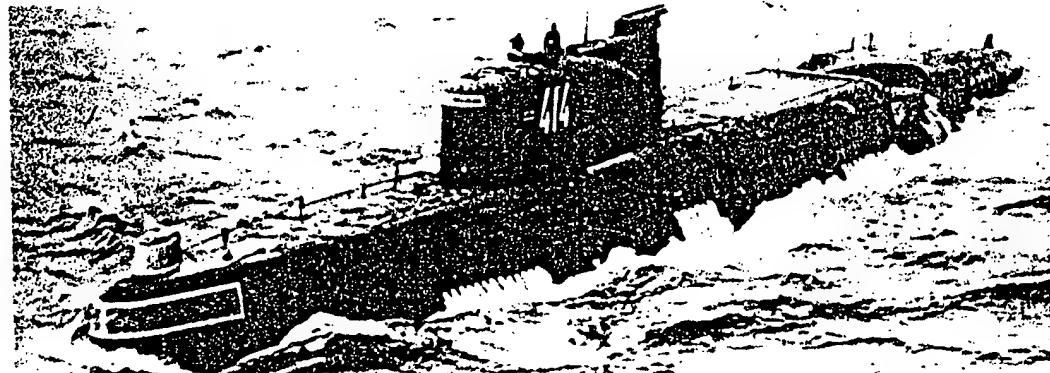
All E-I class submarines were built in Pacific Fleet shipyards. The missile tubes on at least one of these units have been removed, suggesting that these submarines will be reassigned to surveillance and antisubmarine roles.

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Cruise Missile Submarine - SSG

J Class



Production

Construction period 1962-69

Number built

Characteristics

Complement 80

2,800 tons

Submerged 3,500 tons

Propulsion diesel, 2 screws

Performance

Operating depth

normal 1,300 ft

collapse 2,000 ft

Submerged speed

maximum 15 kts for 15 nm

economical 3 kts for 300 nm

Patrol radius

10 days on station 3,000 nm

20 days on station 2,400 nm

Patrol duration

60 days

Armament

Cruise missiles 4 SS-N-3

Torpedoes 22

Construction of this class has ended. J Class submarines are making regular patrols in the North Atlantic and Mediterranean after an unexplained two year absence.

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Cruise Missile Submarine - SSG

**W Conversion Class
("Long Bin")**



Production

Conversion period 1962-64
Number converted 7

Characteristics

Complement 60
Length 275 ft
 23 ft

Displacement
 surfaced 1,300 tons
 submerged 1,500 tons

Propulsion diesel, 2 screws

Performance

Operating depth
 normal 656 ft
 collapse 984 ft

Submerged speed
 maximum 12 kts for 12 nm
 economical 2.5 kts for 250 nm

Patrol radius
 10 days on station 1,800 nm
 20 days on station 1,200 nm

Armament

Cruise missiles 4 SS-N-3
Torpedoes 10

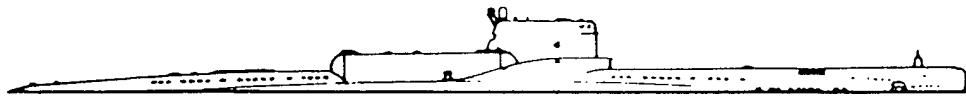
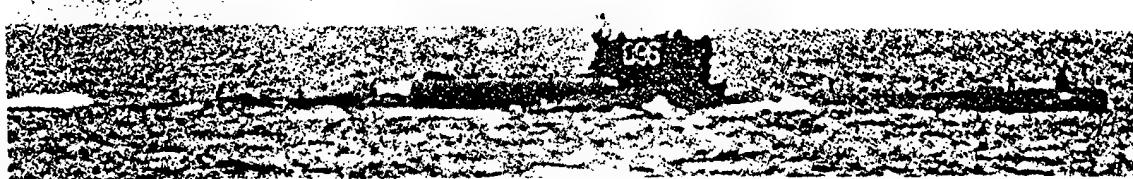
The Long Bin is a W class hull with a 25 foot section added, a new sail, and four missile launchers. These submarines do not operate outside Soviet waters.

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Cruise Missile Submarine - SSC

**W Conversion Class
("Twin Cylinder")**



Production

Conversion period 1961-62

Number converted 5

Characteristics

Complement 55

Length 249 ft

Beam 27 "

Propulsion diesel, 2 screws

Performance

Operating depth

normal 656 ft

collapse 984 ft

Submerged speed

maximum 12 kts for 12 nm

economical 2.5 kts for 250 nm

Patrol radius

10 days on station 1,800 nm

20 days on station 1,200 nm

Armament

Cruise missiles 2 SS-N-3

Torpedoes 12

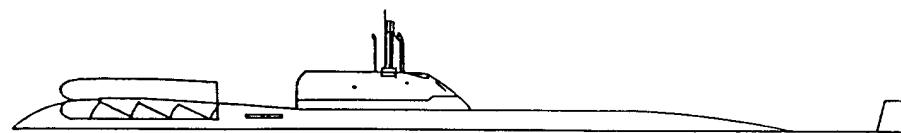
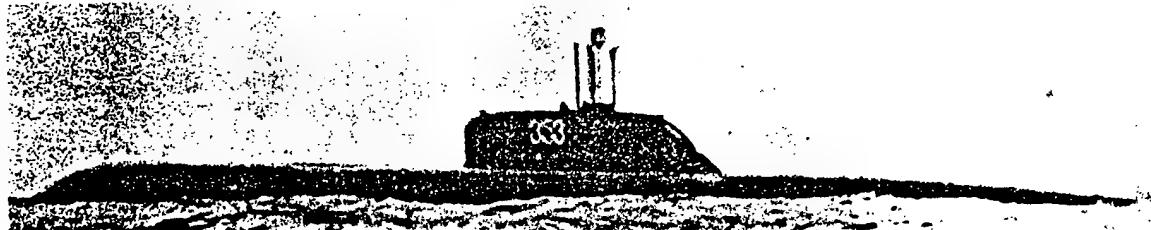
The Twin Cylinder is a standard W class fitted with two missile launchers aft of the sail. These submarines do not operate outside Soviet waters.

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Nuclear Powered Torpedo Attack Submarine - SSN

C Class



Production

Construction start	1964
Number completed by Dec 69	3

Characteristics

Length	about 80
	300 ft
	34 ft

Displacement	
surface	4,400 tons
submerged	"

Propulsion	nuclear
------------	---------

Performance

Operating depth	
normal	1,300 ft
collapse	2,000 ft

Submerged speed	about 30 kts
-----------------	--------------

Patrol radius	
10 days on station	7,200 nm
20 days on station	5,800 nm

Patrol duration	60 days
-----------------	---------

Noise levels	at 5 kts, 14 kts
low frequency	55-60 db
sonar band	16 db
	22 db

Armament

Missiles	8, of undetermined
	short range type

Torpedoes	18
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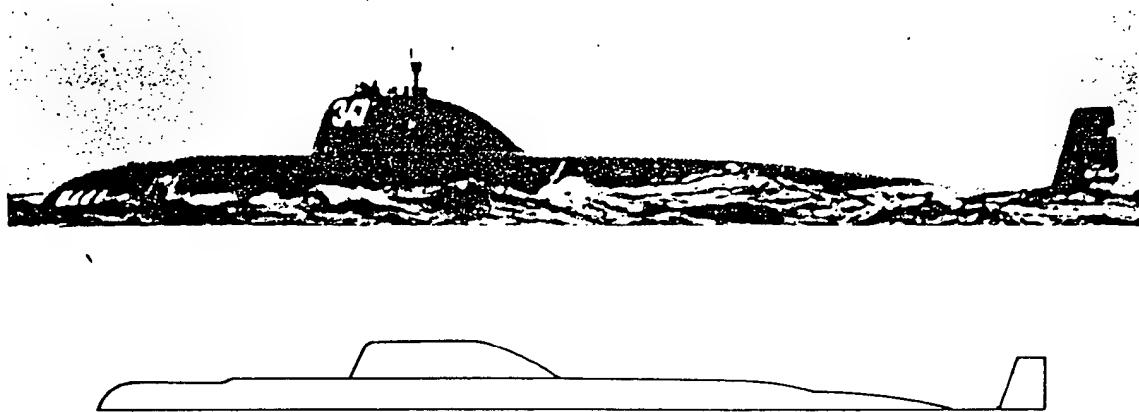
This class is being built at Gor'kiy. Eight missile tubes installed near the bow are probably for use against surface or submerged targets at ranges of less than 50 miles. This submarine is equipped with a powerful low frequency sonar.

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Nuclear Powered Torpedo Attack Submarine - SSN

V Class



Production

Construction start	1964
Number completed by Dec 69	6

Characteristics

Complement	about 80
Length	300 ft
Beam	33 ft
Displacement	700 tons
surfaced	
Propulsion	nuclear

Performance

Operating depth	
normal	1,300 ft
collapse	2,000 ft
Submerged speed	about 30 kts
Patrol radius	
10 days on station	7,200 nm
20 days on station	5,800 nm
Patrol duration	60 days
Noise levels	at 5 kts, 14 kts
low frequency	55-60 db
sonar band	65 db
	16 db
	22 db

Armament

Torpedoes	32
-----------	----

This submarine is being built at Leningrad. It appears to be a follow-on to the N class and most likely is intended for use against surface ships and for reconnaissance missions.

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Nuclear Powered Torpedo Attack Submarine - SSN

A Class

Production

Construction start 1967

Characteristics

Length	240 ft
Beam	about 30 ft
Power	probably nuclear

The Sudomekh shipyard at Leningrad, builder of this new class, can produce about two units per year. The first unit was launched in April 1969 and is now nearly complete.

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Nuclear Powered Torpedo Attack Submarine - SSN

N Class



Production

Construction period	1956-66
Number built	15

Characteristics

Complement	90
Length	360 ft
Beam	30 ft
Displacement	
surfaced	4,000 tons
submerged	4,800 tons
Propulsion	nuclear, 2 screws

Performance

Operating depth	
normal	1,000 ft
collapse	1,500 ft
Maximum submerged speed	30 kts
Patrol radius	
10 days on station	7,200 nm
20 days on station	5,800 nm
Patrol duration	60 days
Noise levels	at 7 kts, 15 kts
low frequency	60 db 72 db
sonar band	18 db 32 db

Armament

Torpedoes	32
-----------	----

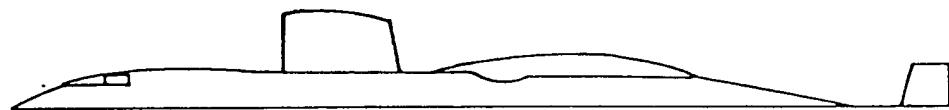
The N class was the first nuclear powered submarine built by the USSR. Its primary missions are open ocean surveillance and attack against surface ships.

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Torpedo Attack Submarine - SS

B Class



Production

Construction start	1966
Number completed by Dec 69	4

Characteristics

Complement	about 75
Length	274 ft
Beam	30 ..
	~ ,400 tons
	2,900 tons
	diesel

Performance

Operating depth	
normal	1,300 ft
collapse	2,000 ft
Submerged speed	about 22 kts
Patrol radius	
10 days on station	3,000 nm
20 days on station	2,400 nm

Armament

Torpedoes	18
-----------	----

This short hulled submarine is being built at Komsomol'sk. It probably will be used to patrol Soviet coastal waters. Diesel propulsion and limited endurance reduce its effectiveness against nuclear submarines operating in the open ocean.

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Torpedo Attack Submarine - SS

F Class



Production

Construction period 1957-68

Number built 48

Characteristics

Complement 79

Length 300 ft

Beam 25 ft

Displacement 175 ft

surfaced

submerged

diesel, 3 screws

Submerging depth 920 ft

normal collapse 1,400 ft

Submerged speed

maximum 16.2 kts for 16.2 nm

economical 2 kts for 400 nm

Patrol radius

10 days on station 3,000 nm

20 days on station 2,400 nm

Patrol duration 60 days

Noise levels at 6 kts

snorkel battery

low frequency 60 db 45 db

sonar band 32 db 6 db

Armament

Torpedoes 22

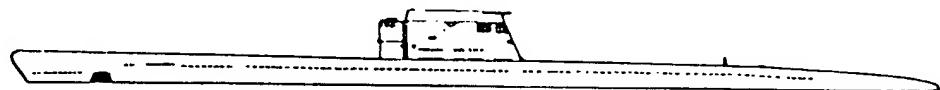
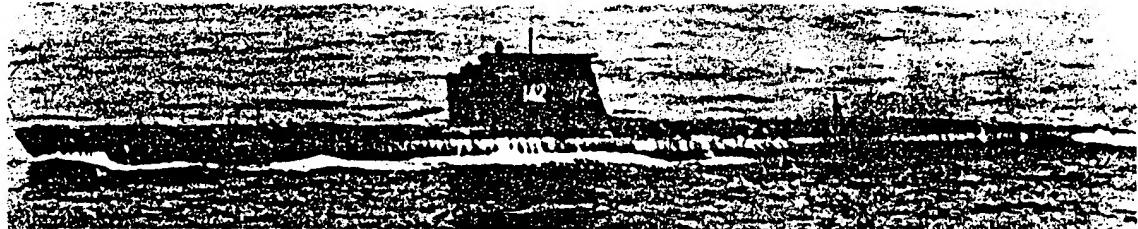
Some six to eight units of this class, one of the best diesel submarines of any country, normally operate in the Mediterranean. F class submarines are being sold to India.

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Torpedo Attack Submarine - SS

Z Class



Production

Construction period 1951-56

Number built 20

Characteristics

Complement 74

Length 295 ft

Beam 26 ft

Displacement

surfaced 2,100 tons

submerged 2,500 tons

Propulsion diesel, 3 screws

Performance

Operating depth

normal 750 ft

collapse 1,100 ft

Submerged speed

maximum 15 kts for 15 nm

economical 2 kts for 400 nm

Patrol radius

10 days on station 3,000 nm

20 days on station 2,400 nm

Patrol duration 60 days

Noise levels at 6 kts

snorkel battery

low frequency 60 db 45 db

sonar band 32 db 6 db

Armament

Torpedoes 22

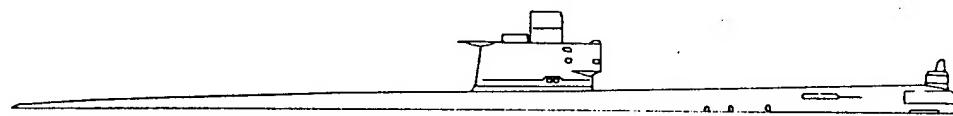
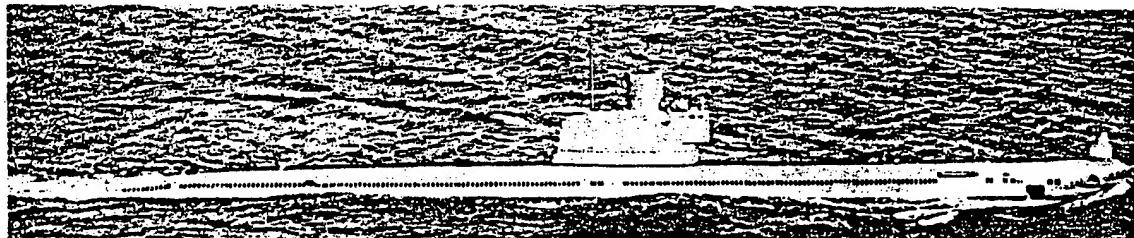
A few Z class units have been modified as test platforms for a large new sonar. The new sonar, or an improved version of it, probably is being installed in the new attack submarines currently being built in the USSR.

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Torpedo Attack Submarine - SS

R Class



Production

Construction period 1958-62

Number built 20

Characteristics

Complement 59

Length 250 ft

Beam 23 ft

Displace

1,800 tons

Operational depth

normal 920 ft

collapse 1,400 ft

Submerged speed

maximum 15.5 kts for 15.5 nm

economical 2.5 kts for 300 nm

Patrol radius

10 days on station 1,800 nm

20 days on station 1,200 nm

Patrol duration 40 days

Noise levels at 6 kts

snorkel battery

low frequency 60 db 45 db

sonar band 32 db 6 db

Armament

Torpedoes 18

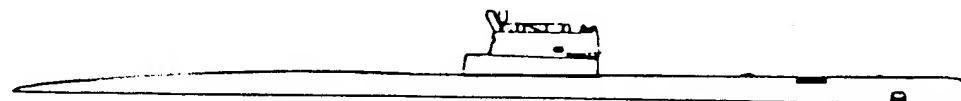
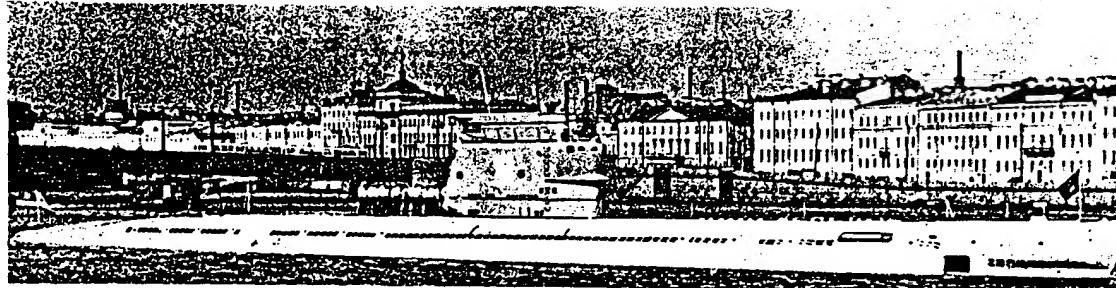
The USSR has provided six R class units to Egypt. Communist China is building submarines of this class.

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Torpedo Attack Submarine - SS

W Class



Production

Construction period	1950-57
Number built	235

Characteristics

Complement	54
Length	249 ft
Beam	21 ft
Displacement	
surfaced	1,055 tons
submerged	1,355 tons
P. Power	diesel, 2,000 bhp

Performance

Operating depth	
normal	656 ft
collapse	984 ft

Submerged speed	
maximum	13.5 kts for 13.5 nm
economical	2.5 kts for 300 nm

Patrol radius	
10 days on station	1,800 nm
20 days on station	1,200 nm

Patrol duration	40 days
Noise levels	at 6 kts

snorkel	battery
low frequency	60 db 45 db
sonar band	32 db 6 db

Armament

Torpedoes	12
-----------	----

The USSR has transferred more than 30 W class submarines to other Communist countries and to Indonesia and Egypt. Some W class units have been built in China from sections prefabricated in the USSR. The Soviets have modified a few units for testing new electronic equipment.

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